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ABSTRACT

Kanawha County Schools' replication of the Johns Hopkins Fast Paced Mathematics program has completed its first year of implementation. This program is an alternative that speeds up the rate of learning for mathematically gifted students to a pace that is consistent with their capabilities. The program served eighth grade students. The main purposes of this study are: (1) to determine if product objectives were attained; (2) to examine other indicators of project effectiveness; (3) to provide information that will be helpful in planning the 1981-82 program; and (4) to collect baseline data concerning student attitude toward mathematics. (Author/GK)

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# Research and Evaluation Bulletin

## Fast Paced Mathematics Project

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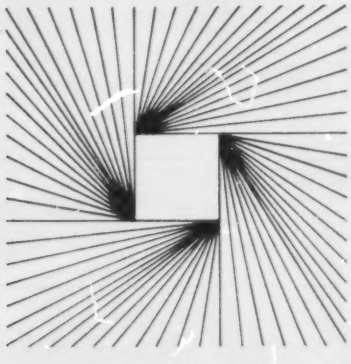

Kanawha County Schools

Department of Research and Evaluation

TM 810 917

# FAST PACED MATHEMATICS PROJECT

# FINAL EVALUATION REPORT

PREPARED BY
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Coordinator of Research and Evaluation

September 30, 1981

KANAWHA COUNTY SCHOOLS
Department of
Research and Evaluation
Dr. Catherine C. Chandler, Director

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## INTRODUCTION

Kanawha County Schools' replication of the Johns Hopkins Fast Paced Mathematics program has completed its first year of implementation (September 1, 1980 - June 30, 1981). This program is an alternative that speeds up the rate of learning for mathematically gifted students to a pace that is consistent with their capabilities. The program served 15 eighth grade students from eight public schools and one private school. Funds were provided by ESEA Title IV-C in the amount of $4,468.00.

The students were selected using procedures and criteria that were suggested by the Johns Hopkins University Offices of Talent Identification and Development. The Fast Paced Math class met one evening per week for a three-hour session at South Charleston Junior High School. In addition to a teacher, a teaching assistant was hired to grade homework and help grade quizzes and tests. The assistant also acted as a tutor for students with difficulties and unanswered questions. Homework was an essential aspect of the program. Students were expected to spend at least 10 hours a week on homework. Homework was designed to be a learning tool as well as a concept reinforcer. All students were expected to complete at least two courses in the pre-calculus sequence. A score at the 95 percentile on the appropriate Co-op Math Test was needed to obtain course credit.

The main purposes of this study are: (1) To determine if product objectives (i.e., required by the ESEA IV, Title C proposal) were attained; (2) to examine other indicators of project effectiveness; (3) to provide information that will be helpful in planning the 1981-82 program; and (4) to collect baseline data concerning student attitude toward mathematics. Findings were shared with the project staff, parents and students prior to the first regular class meeting of the 1981-82 school year. Hence, the third purpose of the study has been achieved through means other than this document.

## FINDINGS

The primary sources of data were: (1) Records maintained by the project staff; (2) Fast Paced Math Program Survey (Appendix A); (3) informal discussions with parents following survey administration; (4) findings from the April, 1981 on-site review (Appendix B) and (5) the Revised Math Attitude Scale (Appendix C). Survey data and math attitude data were collected on June 1, 1981 prior to the regular class meeting. Data regarding product objective attainment and other indicators of project effectiveness will be presented first and they are followed by: (1) Information that will be helpful in planning the 1981-82 program and (2) math attitude results.

### Product Objectives and Other Indicators of Project Effectiveness

Two product objectives were stated in the ESEA IV, Part C project proposal. Other effectiveness indicators include: (1) Two survey items; (2) parent and student perceptions of project strengths and weaknesses and (3) findings from the on-site review.

Product Objectives - The objective that 100% of the students will complete two years of mathematics courses as measured by attaining a score on the STEP end-of-course tests or Co-op Math Tests equivalent to the 90th percentile was not achieved. About 93% of the students (i.e., 14 of 15) completed two years of math last year. The objective that 50% of the students will complete three years of mathematics courses as measured by attaining a score on the STEP end-of-course tests or Co-op Math Tests equivalent to the 90th percentile was not achieved. Seven percent of the student (i.e., 1 of 15) completed three courses: (1) Algebra II (one credit); (2) College Algebra (half credit) and (3) Trigonometry (half credit).

Survey Items - The results for item #7 (parent form and student form) are presented first and they are followed by the results for item #9 (parent form and student form).

Item #7 (as stated on the parent form). If you had the decision to make over again, would you enroll your son/daughter in the Fast Paced Math Program?

Percent of Response

| | Yes | No | Not Sure | N |
|---|---|---|---|---|
| Parents | 71.4 | 14.3 | 14.3 | 14 |
| Students | 66.7 | 13.3 | 20.0 | 15 |
| Total | 69.0 | 13.8 | 17.2 | 29 |

The majority of parents (71.4%) and students (66.7%) provided a positive response.

Item #9 (as stated on the parent form). Overall, how effective do you consider the Fast Paced Math Program in helping your son/daughter learn mathematics?

Percent of Response

| | Very Effective | Effective | Not Very Effective | Not Effective | Undecided | N |
|---|---|---|---|---|---|---|
| Parents | 15.4 | 53.9 | 15.4 | 0.0 | 15.4 | 13 |
| Students | 20.0 | 53.3 | 6.7 | 0.0 | 20.0 | 15 |
| Total | 17.9 | 53.6 | 10.7 | 0.0 | 17.9 | 28 |

About 70% of the respondents indicated that the Fast Paced Math Program was at least effective in helping the students learn math.

Perceptions of Project Strengths and Weaknesses - Parents and students were asked to list one to three strengths and one to three weaknesses of the Fast Paced Math Program.

Strengths - Similar responses are grouped and listed below:

| Total Frequency | | Groups of Comments |
|---|---|---|
| 13 | 1. | Allows students to meet and interact with other students at the same ability level (11 respondents); good peer influence (1 respondent) and helps students overcome the feeling of being different (1 respondent). |
| 11 | 2. | Students can work at their own speed (10 respondents) and doesn't hold you back (1 respondent). |
| 10 | 3. | Allows students to move through math more quickly (10 respondents). |
| 10 | 4. | Maintains students' interest level in math - not bored with the repetitiveness and slower pace of regular class (10 respondents). |
| 8 | 5. | Develops good work/study habits (4 respondents); set and meet goals (2 respondents) and teaches students to budget their time (2 respondents). |
| 8 | 6. | Allows students to self-teach and to learn by reading (6 respondents); learn to read effectively (1 respondent) and develops individual's thinking and reasoning abilities (1 respondent). |
| 8 | 7. | Requires higher standards for course credit (2 respondents); develops better/more math skills (2 respondents); work through complete book (1 respondent); access to better facility (1 respondent); and very good teacher (2 respondents). |
| 5 | 8. | Challenges the student (5 respondents). |
| 1 | 9. | Provides three hours of uninterrupted study (1 respondent). |
| 1 | 10. | Keeps students busy (1 respondent). |

Weaknesses - Similar responses are grouped and listed below:

| Total Frequency | | Groups of Comments |
|---|---|---|
| 13 | 1. | Don't have enough instruction during the week/lack of help at the home school (11 respondents); lack of education of the home school administrators (1 respondent); and conflict with home school administration (1 respondent). |

Weaknesses (continued

| Total Frequency | Groups of Comments |
|---|---|
| 12 | 2. Interferes with Monday night homework (4 respondents); very time consuming (3 respondents); students under pressure at times with Fast Paced Math and other subjects (3 respondents); takes away from social life and play time (1 respondent); and too much homework (1 respondent). |
| 9 | 3. Turn around time on homework was too slow (2 respondents); students not allowed to proceed at their own pace (2 respondents); hard for some students to keep up (1 respondent); not enough regular instant feedback (1 respondent); vagueness of assignments (1 respondent); lack of opportunity to review and check progress (1 respondent); and not as much instruction in some areas (e.g., theory) as needed (1 respondent). |
| 8 | 4. Class being scheduled at night (3 respondents); class periods are too long (3 respondents); separate class from regular school day (1 respondent); and with math only once a week, there is a tendency to procrastinate on math homework (1 respondent). |
| 4 | 5. May not retain what they've quickly learned (2 respondents); not as thorough learning (1 respondent) and other courses which use math do not keep pace with Fast Paced Math (1 respondent). |
| 1 | 6. Students may develop egotistical traits (1 respondent). |
| 1 | 7. Children whose parents are not math specialists are at a disadvantage as far as day to day work (1 respondent). |

On-Site Review - The completed West Virginia Department of Education on-site review form is provided in Appendix B. The findings were extremely supportive of the project and project staff (e.g., an excellent implementation with strong county support).

Information for Program Planning

Survey items address five areas: (1) Time schedule for 1981-82 program; (2) student activities at the home school; (3) attitude toward the amount of Fast Paced Math homework; (4) attitude toward the pace of the program; and (5) attendance. In addition, parents and students were asked to recommend ways to improve the program.

Survey Items - In regard to the time schedule the findings (i.e., items 1-3) support offering the program in one three-hour block on Monday night from 6:00 - 9:00.

The participants receive math course credit through the program. Survey item #4 was used to identify the options that were most frequently selected to replace the regular math course. About 50% of the students remained in their regular math course. A little over 25% of the students attended a study hall. The remaining students either took an elective (13.3%) or selected a combination of study hall and regular math class (13.3%). When asked if they would make the same decision (i.e., select the same option) again, 40% of the students indicated that they would not.

Item #6 (as stated on the parent form). In general, do you think the amount of Fast Paced Math homework was too much, about right or not enough?

Percent of Response

| | Too Much | About Right | Not Enough | N |
|---|---|---|---|---|
| Parents | 14.3 | 78.6 | 7.1 | 14 |
| Students | 13.3 | 86.7 | 0.0 | 15 |
| Total | 13.8 | 82.8 | 3.4 | 29 |

Most parents (78.6%) and students (86.7%) noted that the amount of homework was about right.

Item #8 (as stated on the parent form). In general, do you think the pace (i.e., the speed with which your son/daughter moved from topic to topic) of the Fast Paced Math Program was too fast, about right or not fast enough?

| | Percent of Response | | | |
|---|---|---|---|---|
| | Too Fast | About Right | Not Fast Enough | N |
| Parents | 23.1 | 69.2 | 7.7 | 13 |
| Students | 20.0 | 80.0 | 0.0 | 15 |
| Total | 21.4 | 75.0 | 3.6 | 28 |

Most respondents (75.0%) felt that the program pace was about right, however, 21.4% noted that the pace was too fast.

Item #11 (student form only). How many Fast Paced Math sessions have you missed during the current school year?

| | Number of Days Absent | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | Don't Know | Total |
| Number of students | 5 | 2 | 3 | 1 | 1 | 1 | 2 | 15 |

Five of the fifteen students (33.3%) had perfect attendance.

Recommendations - Parents and students were asked to recommend one of three ways to improve the program. Similar responses are grouped and listed below.

| Total Frequency | Groups of Comments |
|---|---|
| 11 | 1. Arrange for one home school math teacher to guide the Fast Paced Math students during regular class period (5 respondents); obtain greater program support/ cooperation in the regular school setting (4 respondents); and educate home school personnel (2 respondents). |
| 10 | 2. Shorten class periods (3 respondents); have program during regular hours (3 respondents); some flexibility in scheduling weekly meetings to prevent conflicts with other school programs (1 respondent); have more breaks (1 respondent); have two classes per week for a shorter time period (1 respondent); and schedule class on weekends (1 respondent). |
| 8 | 3. Provide computer experience (2 respondents); have less homework (2 respondents); have more project oriented assignments (1 respondent); provide a short planned activity other than homework for each session (1 respondent); supply answers to the even problems to help students check their work at home (1 respondent); and try a more structured class for teaching theory (1 respondent). |
| 7 | 4. Have more aides so that the turnaround time for grading homework assignments is shorter (3 respondents); add another instructional person to the Fast Paced Math classroom (3 respondents); and have materials and tests ready when needed (1 respondent). |
| 5 | 5. Allow students to advance at their own pace - don't require a course per semester (4 respondents); and allow more self-pacing (1 respondent). |
| 4 | 6. Provide a progress chart that demonstrates student achievement with respect to teacher expectation and class/group average (2 respondents); have more tests with feedback to parents (1 respondent); and give a full retest three months after finals to check retention (1 respondent). |
| 1 | 7. Give future students a trial session before requiring a final decision on program participation (1 respondent). |
| 1 | 8. Watch for and discourage egotistical traits among students (1 respondent). |
| 1 | 9. Hold class in an air-conditioned school (1 respondent). |
| 1 | 10. Stress using time wisely (1 respondent). |

Attitude Toward Mathematics

By design, the program required a great deal of work from the students. One survey item on the parent form and one on the student form was included to detect negative student attitude change.

Scores from the Revised Math Attitude Scale were obtained on June 1, 1981. The data will serve as a baseline for identifying attitude changes during the students' second year of program participation. The scale will also be administered to first year students during September 1981 and June 1982.

Survey Item - The results for item #10 (parent form and student form) are presented below.

Item #10 (as stated on the parent form). React to the following statement. My son/daughter likes math better now than he/she did at the beginning of the school year.

Percent of Response

| | Strongly Agree | Agree | Disagree | Strongly Disagree | Undecided | Same | N |
|---|---|---|---|---|---|---|---|
| Parents | 15.4 | 53.9 | 7.7 | 0.0 | 15.4 | 7.7 | 13 |
| Students | 20.0 | 26.7 | 13.3 | 0.0 | 33.3 | 6.7 | 15 |
| Total | 17.9 | 39.3 | 10.7 | 0.0 | 25.0 | 7.1 | 28 |

The item was purposely loaded to facilitate the identification of negative attitude change. Such change could have provided some indication of burnout due to the rigors of the program. Hence, the findings of interest are the percentages of parents and students that selected disagree or strongly disagree. The findings do not suggest student burnout.

Attitude Toward Math - The Revised Math Attitude Scale is composed of 20 items in a Likert format. Scores could range from 20 points to 100 points. The scores showed a mean of 84.6, a standard deviation of 8.9 and a range of 28 (i.e., 97-69) with a sample of 16 students. Half of the students had scores above 90 points. The mean is higher than the mean obtained in the evaluation of another Kanawha County Schools' project. The other project included low ability sophomores. Hence, only the most superficial comparison can be made.

The scale will be administered in June, 1982 to the students that decide to participate in the program for a second year. The data will be analyzed in a pretest-posttest design using the t-test for correlated samples.

## DISCUSSION OF MAJOR FINDINGS AND RECOMMENDATIONS

The brevity of the document precludes the need to present a long list of findings. This section will include only a brief discussion of results that appear across more than one source of information. Recommendations will focus on two general areas: (1) Major concerns, and (2) suggestions for using the evaluation data in a needs assessment.

### Major Findings

Project Effectiveness - Four types of information were used to examine the effectiveness of the project: (1) Records regarding the attainment of product objectives; (2) parent and student survey items; (3) parent and student perceptions of the project's strengths and weaknesses; and (4) findings from the on-site review. The product objectives, which this evaluator considers a bit ambitious, were not achieved. About 93% rather than 100% of the students completed two years of math in one year. Secondly, seven percent rather than 50% of the students completed three years of math in one year.

The findings from the parent and student survey items were supportive of project effectiveness. For example, the majority of respondents noted that the project was at least effective in helping students learn math.

The following were most frequently listed as strengths: (1) Allows students to meet and interact with other students at the same ability level; (2) provides the students with an opportunity to work at their own pace; and (3) maintains students' interest in math by reducing repetition. Typically, weaknesses were noted in regard to articulation with the home school and the amount of time needed to participate in the program.

The West Virginia Department of Education on-site review team provided very strong support for the program. When the four types of information are considered together, it appears that the project was successful.

Program Planning - Two types of information were used to provide planning information: (1) Parent and student survey items and (2) parent and student recommendations concerning ways to improve the project. All such information was shared with the project staff prior to the beginning of the 1981-82 school year. The data suggested some dissatisfaction with the options (i.e., to replace the regular math course) available to the students at their home schools. Although some respondents suggested shorter sessions, the survey findings supported continuing the sessions in one three-hour block per week. The respondents were supportive of the following aspects of the 1980-81 program: (1) The amount of homework and (2) the pace of the program. There appears to be no need to reduce the amount of homework or slow the pace of the program. Review of the second section under recommendations (needs assessment) should be helpful to program planning.

## Recommendations

Major Concerns - The area that appeared to show the greatest need was the articulation between the project and the home school (e.g., assistance from the math teachers at the home school, options available at the home school). This might be expected during the first year of implementation. However, current efforts to reduce this need should be monitored. If such efforts are not successful, a formal plan should be developed. The planning committee should include decision-makers from the Division of Curriculum and Instruction and the Division of Secondary Schools. No other areas seem to warrant major concern.

Needs Assessment - The term refers to a process of determining gaps between "what is" and "what should be", placing the gaps in priority order, and selecting gaps of the highest priority for resolution. Much of the data presented in this document could help program planners define the "what is" portion of the needs assessment process. A simple example is provided below.

| What Is | What Should Be | Need |
|---|---|---|
| 1. 33% of the project participants had perfect class attendance. | 1. At least 50% of the project participants should have perfect attendance. | 1. Increase the percentage of students with perfect attendance by 17%. |
| 2. Scores from the Revised Math Attitude Scale showed a mean of 84.6 and a standard deviation of 8.9 (i.e., at end of the first year of implementation). | 2. At the end of the second year, the ninth grade student scores should average 87.5 points. | 2. Increase the attitude toward math scores by 2.9 points (i.e., 1/3 standard deviation - a criterion for achieving practical significance). |

The next step is to place the needs in priority order. This could be accomplished by: (1) Comparing the magnitude of the gap between "what is" and "what should be" for need #1 with the magnitude of the gap for need #2; (2) considering the cost to meet the need versus the cost of ignoring the need and (3) using professional judgment. For the purpose of the example, the attendance need was identified as the highest priority and selected for resolution.

The next step is to identify and/or develop strategies/processes that will reduce the need/gap/discrepancy. For example, the Kanawha County Schools Attendance Policy could be applied to the Fast Paced Math Program.

Assuming the policy has been successfully implemented during the 1981-82 school year, it becomes a simple task to once again collect attendance data and determine the amount of gap reduction. The data also provide at least part of the "what is" information for the following year's needs assessment. This scenario was presented to exemplify the interrelationships among planning, needs assessment and evaluation. This evaluator will be available to help project staff members implement the aforementioned processes.

## APPENDIX A

## FAST PACED MATH PROGRAM SURVEY

1. Parent Form - Part I
2. Student Form - Part I
3. Parent and Student Form - Part II

KANAWHA COUNTY SCHOOLS

FAST PACED MATH PROGRAM SURVEY

1980-81: PARENT FORM

The responses to these questions are important for educational planning and decision-making. Since you have a very valuable prespective of the program, please answer each question frankly and thoughtfully. Thank you in advance for your cooperation.

PART I

ITEMS 1-3 CONCERN THE TIME SCHEDULE FOR THE 1981-82 FAST PACED MATH PROGRAM

1. For next year, how should the Fast Paced Math Program be scheduled?

   CHECK ONE.

   ___ Three hours, one night per week
   ___ One and a half hours, twice a week
   ___ Saturday morning
   ___ Saturday afternoon

2. What time should the class start?

   _____

3. Which night(s) would you prefer?

   _____

* * * * *

ITEMS 4-5 CONCERN YOUR SON/DAUGHTER'S ACTIVITIES AT HIS/HER HOME SCHOOL

4. Your son/daughter will receive course credit for math through the Fast Paced Math Program. Which one of the following options did he/she select to replace his/her regular math class?

   CHECK ONE.

   ___ Attended a study hall
   ___ Took an elective
   ___ Attended regular math class
   ___ Other, please specify. _____

   _____

5. If your son/daughter had the decision (Item 4) to make over again, would you advise him/her to select the same option?

CHECK ONE.

____ Yes ____ No

If no, why not? _____

_____

_____

_____

* * * * *

ITEMS 6-10 CONCERN YOUR ATTITUDE TOWARD OTHER IMPORTANT ASPECTS OF THE CURRENT PROGRAM.

6. In general, do you think the amount of Fast Paced Math homework was too much, about right or not enough?

CIRCLE ONE.

Too Much About Right Not Enough

7. If you had the decision to make over again, would you enroll your son/daughter in the Fast Paced Math Program?

Yes No Not Sure

8. In general, do you think the pace (i.e., the speed with which your son/daughter moved from topic to topic) of the Fast Paced Math Program was too fast, about right or not fast enough?

CIRCLE ONE.

Too Fast About Right Not Fast Enough

9. Overall, how effective do you consider the Fast Paced Math Program in helping your son/daughter learn mathematics?

CIRCLE ONE.

Very Effective Effective Not Very Effective Not Effective Undecided

10. React to the following statement. My son/daughter likes math better now than he/she did at the beginning of the school year.

CIRCLE ONE.

| Strongly Agree | Agree | Disagree | Strongly Disagree | Undecided |
|---|---|---|---|---|

END OF PART I, GO TO PART II.

KANAWHA COUNTY SCHOOLS

FAST PACED MATH PROGRAM SURVEY

1980-81: STUDENT FORM

The responses to these questions are important for educational planning and decision-making. Since you have a very valuable prespective of the program, please answer each question frankly and thoughtfully. Thank you in advance for your cooperation.

PART I

ITEMS 1-3 CONCERN THE TIME SCHEDULE FOR THE 1981-82 FAST PACED MATH PROGRAM

1. For next year, how should the Fast Paced Math Program be scheduled?

   CHECK ONE.

   ___ Three hours, one night per week
   ___ One and a half hours, twice a week
   ___ Saturday morning
   ___ Saturday afternoon

2. What time should the class start?

   _____

3. Which night(s) would you prefer?

   _____

* * * * *

ITEMS 4-5 CONCERN YOUR ACTIVITIES AT YOUR HOME SCHOOL

4. You receive course credit for math through the Fast Paced Math Program. Which one of the following options did you select to replace your regular math class?

   CHECK ONE.

   ___ Attended a study hall
   ___ Took an elective
   ___ Attended regular math class
   ___ Other, please specify. _____

   _____

5. If you had the decision (Item 4) to make over again, would you select the same option?

CHECK ONE.

_____ Yes _____ No

If no, why not? _____

_____

_____

_____

* * * * *

ITEMS 6-10 CONCERN YOUR ATTITUDE TOWARD OTHER IMPORTANT ASPECTS OF THE CURRENT PROGRAM.

6. In general, do you think the amount of Fast Paced Math homework was too much, about right or not enough?

CIRCLE ONE.

Too Much About Right Not Enough

7. If you had the decision to make over again, would you enroll in the Fast Paced Math Program?

CIRCLE ONE.

Yes No Not Sure

8. In general, do you think the pace (i.e., the speed with which you moved from topic to topic) of the Fast Paced Math Program was too fast, about right or not fast enough?

CIRCLE ONE.

Too Fast About Right Not Fast Enough

9. Overall, how effective do you consider the Fast Paced Math Program in helping you learn mathematics?

CIRCLE ONE.

Very Effective Effective Not Very Effective Not Effective Undecided

10. React to the following statement. I like math better now than I did at the beginning of the school year.

CIRCLE ONE.

| Strongly Agree | Agree | Disagree | Strongly Disagree | Undecided |
|---|---|---|---|---|

* * * * *

ITEM 11 CONCERNS ATTENDANCE

11. How many Fast Paced Math sessions have you missed during the current school year?

_____

END OF PART I, GO TO PART II.

PART II - STUDENTS AND PARENTS

1. List one to three strengths of the Fast Paced Math Program.

   1. _____

   _____

   2. _____

   _____

   3. _____

   _____

2. List one to three weaknesses of the Fast Paced Math Program.

   1. _____

   _____

   2. _____

   _____

   3. _____

   _____

3. What ways would you recommend to improve the Fast Paced Math Program?

   LIST BELOW.

   1. _____

   _____

   2. _____

   _____

   3. _____

   _____

4. You may write other comments on the back of this page.

THANKS AGAIN!!!

## APPENDIX B

## WEST VIRGINIA DEPARTMENT OF EDUCATION
## ON-SITE REVIEW FINDINGS

WEST VIRGINIA DEPARTMENT OF EDUCATION

ON-SITE REVIEW FORM

ESEA IV-C

PRODUCT OBJECTIVES AND EVALUATION

1. Is every product objective in a condition of being fulfilled? Yes ✓ Partly ____ No ____

   Comments:

2. Is every product objective measurable? Yes ✓ Partly ____ No ____

   Comments:

3. Are all instrument (tests) to be used available for examination, specifically locally developed instruments: Yes ✓ Partly ____ No ____

   Comments:

   The project is being evaluated using the Co-op Mathematics Test.

4. Are there results available for each product objective? Yes ____ No ✓

   If no, when will they be available? June, 1981.

   Final results are to be included with end-of-project report due 90 days after IV-C funding ends.

5. Do the results show evidence of improvement? Yes ____ No ____ N/A ✓

   Comments:

6. Are (were) there plans for comparison of results? If yes, how? Yes ✓ No ____

   control group ____ pre-post test scores ____

   normative data ✓ other ____

   projected scores ____

   Comments:

7. Have the results been statistically compared? Yes ____
   Partly ____
   No ✓

   If yes, how? (X)
   ___ Chi-Square
   ___ T-Test
   ___ Analysis of Covariance
   ___ Other

8. Are the evaluation procedures as planned and/or executed satisfactory to evaluate each product objective? Yes ✓
   Partly ____
   No ____

   Comments:

ACTIVITIES

9. Are the activities of the project on schedule according to the proposal? Yes ✓
   Partly ____
   No ____

   Comments:

   The project is progressing very well; comments from participating students were very positive.

10. Are the activities of this year consistent with the intent of the project? Yes ✓
    Partly ____
    No ____

    Comments:

11. Are the activities of this year as executed satisfactory to achieve the intent of the project? Yes ✓
    Partly ____
    No ____

    Comments:

12. Were the products (results, conclusions, planned program, resource manuals or instructional materials, etc.) to be developed derived from the project available for examination? Yes ____
    Partly ____
    No ____
    N/A ✓

    Comment: (The quality of the product.)

DISSEMINATION

13. Has information about the project been disseminated within the LEA? Yes ✓ Partly ___ No ___

Comments:

(1) Part of Superintendent's Newsletter; (2) letters to parents and memo to school administrators; (3) part of ITV program; and (4) article published in State Ed Paper. Excellent dissemination, but more attention needs to be given to acknowledging sources of funding.

14. Has information about the project been requested by other LEA's? Yes ✓ No ___

Comments:

Information requested and sent to Monongalia and Cabell Counties.

15. Are there plans for additional dissemination this year within the LEA? Yes ✓ No ___

Comments:

An additional newspaper article describing program results.

BUDGET

16. Are the budget expenditures and encumberances consistent with the approved budget, and within 5% descretion? Yes ✓ No ___

Comments:

17. Are current budget records of expenditures available for examination? Yes ✓ No ___

Comments:

18. Is a current and comprehensive equipment inventory maintained and available for examination? Yes ___ No ___ N/A ✓

Comments:

19. Is equipment clearly identified and labeled? Yes ___ No ___ N/A ✓

Comments:

CONTINUATION

20. Will the LEA adopt the project activities, if successful, as part of its regular educational program, and support them with non-Federal resources when Part C funds are no longer provided?

Yes ✓
No ____
? ____

FINDINGS OF THE ON-SITE TEAM:

An excellent implementation with strong county support. All aspects of the program are in good shape. Jean Hall is to be commended for her outstanding involvement and organization of this project. Students' comments toward the program were very positive indicating that the program is stimulating and matching educational opportunities with their talents in mathematics. The county's commitment to expanding and continuing the program is commended by the IV-C office. A special thanks to Ms. Corbett, the teacher of the program, for a very interesting and informative classroom visit.

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Visiting Team: Chairman David M. Porterfield
Alpha E. Wilson
Terri Wilson
Barbara Jones

Signed David M. Porterfield Date April 13, 1981

# APPENDIX C

## REVISED MATH ATTITUDE SCALE

Name_____

Teacher's Name_____

Date_____

REVISED MATH ATTITUDE SCALE (AIKEN, 1963)

DIRECTIONS: Please write your name in the upper right hand corner. Each of the statements on this opinionnaire expresses a feeling which a particular person has toward mathematics. You are to express, on a five-point scale, the extent of agreement between the feeling expressed in each statement and your own personal feeling. The five points are: Strongly Disagree (SD), Disagree (D), Undecided (U), Agree (A), and Strongly Agree (SA). You are to encircle the letter(s) which best indicates how closely you agree or disagree with the feeling expressed in each statement AS IT CONCERNS YOU.

1. I am always under a terrible strain in a math class.

   SD D U A SA

2. I do not like mathematics, and it scares me to have to take it.

   SD D U A SA

3. Mathematics is very interesting to me, and I enjoy math courses.

   SD D U A SA

4. Mathematics is fascinating and fun.

   SD D U A SA

5. Mathematics makes me feel secure, and at the same time it is stimulating.

   SD D U A SA

6. My mind goes blank, and I am unable to think clearly when working math.

   SD D U A SA

7. I feel a sense of insecurity when attempting mathematics.

   SD D U A SA

8. Mathematics makes me feel me feel uncomfortable, restless, irritable and impatient.

   SD D U A SA

9. The feeling that I have toward mathematics is a good feeling.

SD D U A SA

10. Mathematics makes me feel as though I'm lost in a jungle of numbers and can't find my way out.

SD D U A SA

11. Mathematics is something which I enjoy a great deal.

SD D U A SA

12. When I hear the word math, I have a feeling of dislike.

SD D U A SA

13. I approach math with a feeling of hesitation, resulting from a fear of not being able to do math.

SD D U A SA

14. I really like mathematics.

SD D U A SA

15. Mathematics is a course in school which I have always enjoyed studying.

SD D U A SA

16. It makes me nervous to even think about having to do a math proble-

SD D U A SA

17. I have never liked math, and it is my most dreaded subject.

SD D U A SA

18. I am happier in a math class than in any other class.

SD D U A SA

19. I feel at ease in mathematics, and I like it very much.

SD D U A SA

20. I feel a definite positive reaction to mathematics; it's enjoyable

SD D U A SA